Fire Incident Mapping Tools
Work Flow and Hints

Overall Recommendations:

Generally it is recommended to do the following after each day, by shift, or whenever necessary to protect data:

- Make a backup of the map document for each map and set map properties as relative (File > Map Properties > Data Source Options button and make sure the "Store Relative Path Names" radio button is selected).
- Copy all current Incident data to the appropriate History feature classes.
- Use ArcCatalog to compact the database.
- Make a backup of the fire Incident Personal GeoDataBase.

Usually the first information a GIS Specialist receives is the location description of a potential fire. This location is a legal description or a latitude / longitude. From this information, a transportation map is generated to dispatch responding crews to the site. The map should include any known man-made structures in the area, known water sources and known vegetation.

** Transportation Map*

After crews arrive, they normally size up the fire and obtain an estimated boundary. This estimated boundary will make up the first FirePolygon and FireLine(s). As soon as possible obtain the fire origin, date, time, and cause. Typically, there are no assignment breaks early in the fire.

Save information to the history feature dataset.

If the fire extends beyond the initial attack period, additional crews will be dispatched to the fire and the map will contain symbology for crew assignments.

** IAP Map, Briefing Map*

At the start of each planning cycle, archive all previous data to the history feature dataset, start with a new map, and obtain the latest FirePolygon, PerimeterSector, FireLine and FirePoint data. Be ready and available to assist in the briefing of new IC and team.

** IAP Map, Briefing Map*

** Post a copy of the fire polygon layer to NIFC FTP site*

ftp://ftp.nifc.gov/FTP_DIRECTIONS_INCIDENT_SUPPORT_v1.5.pdf

** Post outputs of maps to the NIFC FTP site*

When the fire is divided into the relative assignments, make changes to the Perimeter, any Labels, update any FireLine and any FirePoint information. Update all maps.

As always, follow your filing structure and remember the planning cycle.

General Operation:

The tools are grouped into hierarchical categories. They are laid out on the toolbar from left to right and are as follows:

1. Incident information and GeoDataBase
2. Utilities dealing with metadata, symbology, labeling, etc., and working with selected features
3. FirePolygon and Perimeter feature class tools
4. FireLine feature class tools
5. FirePoint feature class tools

FIMT works best in a left to right fashion. Be sure the incident information is up to date and the correct Incident geodatabase is being edited (if more than one is loaded). Continue sequentially through the groups and the application to ensure best performance.

Tips and Tricks:

1. *Adding Reference Data*
   Never load reference data into the map document prior to the creation and loading of an Incident geodatabase. It will cause map document problems.

2. *Manage by Polygon*
   When a fire perimeter has changed substantially, it is usually easier to delete the fire perimeter from the current Incident feature class (after being sure the feature has been copied to the history feature dataset). Then either create a new FirePolygon or FireLine from scratch or import line or polygon data to form the new perimeter.

   Note: Never try to update more than 50% of a fire polygon perimeter in one process. Results are dramatic.

3. *Updating FirePolygon with Line Data*
   If the user needs to bring in lines to update the polygon, the following is an easy way to update a polygon from a line:
   a. Just load the line theme into the ArcMap document.
   b. Select the polygon to edit, be sure the task is set to ”Reshape Feature” and target is set to ”FirePolygon.”
   c. Using the Selection tools set the selectable layer to “FirePolygon.”
   d. Activate the “Sketch Tool” (pencil).
   e. Place the cursor over the line from the new theme and right mouse click, choose “Replace Sketch.”
   f. If the line is going the same direction (e.g. right to left) as needed to update the polygon, then there will be a green point at the beginning of the line and a red point at the end of the line. Complete line and then finish sketch by double clicking inside of the polygon (pressing the F2 key, or right mouse click, and choose Finish Sketch).
   g. If the line is going the opposite direction then needed, hover over the line, right click, and choose “Flip.” This will change the direction of the line. Now complete the polygon reshape.

h. If there were any Assignment Breaks, they will be proportionally moved to the new perimeter.
i. Finally, "Split Assignment Lines" in the correct locations.

4. *Assignment Breaks*
   Start at one location and work either clockwise or counter clockwise. There is less changing of the attributes and the program does not become confused.

5. *More than One Incident GeoDataBase Loaded*
   Be sure to use the "Switch Incident' tool to ensure the correct Incident is being edited.

6. *History Feature DataSet*
   Turn the display of the History Feature dataset and the Selection of all Hist_ feature datasets off. Since it is a GeoDB and all data within the same workspace is editable at the same time, this will ensure no moving, splitting, or deleting of any information is inadvertently taking place.

7. *More than One Person Editing*
   Personal geodatabases create a lock file and will not let more than one application (or person) work with the file at one time. In such a situation, there are several alternatives.
   a. Manage by Feature Class – export a Feature Class to a shapefile. Allow one person to edit the shapefile. User places a copy of the Incident.mdb in the background of the map document. Add new firelines to the shapefile. When complete, the master editor for the incident can delete any appropriate fire lines and import the shapefile lines into the FC. All of the attributes will also be imported. The same is true for polygons and points.
   b. Edit a copy of the Incident.mdb. Begin by copying Incident data to the History feature dataset. In the copy Incident GeoDB, remove all features from the feature classes being edited, and add new features. The master editor can then load the updates through the same method as above or by using the load tool within ArcCatalog.
   c. Although the following is the least desired method, create a generic shapefile, add the features into the file, and follow the steps used in option "a". Because no attribute data is imported, the master editor will be required to go through each feature to correct the information.
   d. The application will only work on a personal geodatabase. It will not work with SDE.
   e. In the event a lot of data needs to be loaded, it may be easier to load (append) through ArcCatalog. Right click on the Feature Class to be updated and choose the "Load Data" option. Work through the wizard format. Be sure the mapping of columns to the correct FIMT column name is correct.

8. *Auto Measures*
   The auto measure tool calculates the length for lines and the area for polygons by converting the features into an Albers Equal Area Projection, centering the feature in the spatial extent before the calculation is created. This produces the smallest possible error

in the calculation. The standard area and length fields are present and are calculated using the projection defined for the geodatabase.

9. *Fire Lines*
   Most users will convert the PerimeterSector layer lines to FireLines. This is a great place to start since the unit assignments will already be on the lines and they will be broken at the assignment breaks. Split any lines needed to be assigned different FireLine types. Bring in any additional FireLines.

10. *Fire Points*
    Add all FirePoints into the Incident. The points will usually come from many different sources. Once complete, remember to use the "*Populate FirePoint Coordinate Table*" tool. This will provide any map maker the ability to load the table on the map.

11. *Fire Point Coordinate Table*
    After all fire points have been added, populate the FirePointCoordTable to assist in listing coordinate values for principle locations on the map.

Different Versions of the Extension:

In the event a GIS Specialist shows up on the fire having a different version of ArcGIS and FIMT extension, increased communication will be needed to ensure the incident data is maintained in one version. Since there are small differences in the data format and one application will not work with the other, it is best to use the processes listed above before the data can be imported from any other version.

Since the least common denominator of the latest versions of ArcCatalog and ArcGIS can read an older version of the data, it would probably be better to stay with the latest version. The later versions of the Fire Incident Mapping Tools extension has be most features. The users with the earlier versions should work from exported map documents and data.

Save, Compact, Backup:

Be sure to save often and exit the software every one to two hours. Most products built on MS COM objects have trouble operating after long periods of time.

Remember to compact the database often. The file remembers all additions, modifications, and deletions. By doing this, the geodatabase can greatly increase in size. In ArcCatalog, right click on the geodatabase and choose "Compact Database". By doing this, the file decreases in size and the speed of all operations increases.

Always keep a backup copy of the geodatabase and map documents. With so much editing and work going on, they may become corrupted. Follow standard procedures for operating day to day and project to project. Developing the habit of backing up all work will save time, effort, and embarrassment should a problem occur.